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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/920,222	08/01/2001	Robert B. Davies	4151-A4	5846

7590

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EXAMINER

LEE, EUGENE

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/920,222

Applicant(s)

DAVIES, ROBERT B.

Examiner

Eugene Lee

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 8-27 and 34-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 28-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-7, 28-33) in Paper No. 5 is acknowledged.

2. Claims 8-27 and 34-36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: element 93 (see page 6, line 1). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: element 94 (see FIG. 1). A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 thru 3, and 5 thru 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Kendall '244. Kendall discloses (see, for example, FIG. 15) an integrated circuit comprising a substrate 2, isolation layer (dielectric region) 14, trench, region (cavity) 25', and core material (conductive material) 12. The right side of the figure clearly shows an inductor I. Regarding claim 5, see column 3, lines 23-25 wherein the grooves are stated as 15 mils (37.5 microns) deep. Regarding claim 6, see, for example, column 7, lines 32-38.

7. Claims 1, 2, 6, 28, 30, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. '877. Lee discloses (see, for example, FIG. 3J) a semiconductor device comprising a semiconductor substrate, first insulating layer (dielectric layer) 130, first inductor 140, and second inductor 140A. Regarding claim 2, see element 144. Regarding claim 6, see, for example, column 8, lines 38-43. Regarding claim 33, see element 150.

8. Claims 1, 2, 5, 6, 28, and 30 thru 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. '599. Lee discloses (see, for example, FIG. 2B) a semiconductor device comprising a substrate 13, second insulating layer (dielectric region) 18, cavity, polycrystalline silicon (first inductor) 20, and second metal line (second inductor) 11. The polycrystalline silicon composes a part of the inductor and is separated from the second metal line by a third insulating layer 15.

Regarding claims 5 and 31, see, for example, column 3, lines 50-53.

Regarding claim 6, see, for example, column 3, lines 16-27.

Regarding claim 32, see, for example, column 4, lines 44-45.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kendall '244 as applied to claims 1-3, and 5-7 above, and further in view of Matsuzaki '036. Kendall does not disclose the conductive material including copper. However, Matsuzaki discloses a semiconductor device comprising a trench 31 filled with copper. The copper serves as a conductive metal for an induction element such as an inductor. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use copper in Kendall in order to form an inductor with good inductive properties and increased current capacity.

11. Claims 28 thru 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wen et al. '802 in view of Kendall '244. Wen discloses (see, for example, FIG. 13) a semiconductor device comprising a substrate 14, first metal portions (first inductor) 20, and layers (second inductor) 36. A transistor 8 is formed on the surface of the substrate. Wen does not disclose a dielectric region formed with a cavity. However, Kendall discloses a semiconductor device comprising an inductor I and an isolation region (dielectric region formed with a cavity) 25.

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Kendall teaches (see, for example, column 7, lines 22-49) that this isolation region isolates different parts in an integrated circuit. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the isolation region (dielectric region formed with a cavity) in order to isolate different parts of an integrated circuit so that no interference occurs between adjacent devices.

Regarding claims 31 and 32, see, for example, column 3, lines 12-14.

INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 703-305-5695. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 703-308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Eugene Lee
December 12, 2002



EDDIE LEE
SUPERGRADY PATENT EXAMINER
TECHNOLOGY CENTER 2800